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PLATES AND ILLUSTRATIONS.

ARCHITECTURAL CRITICISM.

AS has been stated several times in former criticisms of domestic architecture in New York City, the architects seem to be getting down to a pretty solid foundation and are working on common ground. Curiously enough the style which they have chosen is much that of the old brown stone period, a rather free adaptation of Italian Renaissance treated in a very quiet and simple manner, and depending upon the disposition and size of the openings for effect, rather than upon any wealth of detail. One of the very best which has thus far been erected is the Chesebrough Residence, Albert Joseph Bodker, architect (Plates XXXVII-XL), because of the purity of the detail, the simple elegance and thoroughly domestic character of the building preserved throughout the interior as well as the exterior. The introduction of small panes into all the windows is probably the principal point in which the exterior differs from a number of others and it is these small panes which reinforce the domestic character of the house to such a point that there is no possibility of mistaking it for a club or an institution, but indicate it as primarily a home.

Of the exteriors there need be very little said, they are their own best exponents, and both in the general view and in the detail of the entrance door one finds a delightful wall surface permitted to remain undistorted by ornament placed without significance. The various portions of the wall surface are separated by molded courses of excellent character or by flat ornamented bands. These are all that is absolutely required; McKim, Mead & White, themselves, could hardly have done much better, and with due deference to the architect, I believe that he has learned a most valuable lesson from the works of that firm which most of us might learn to advantage.

The interiors are treated in a style reminiscent at once of Colonial, and of that late Italian period which, except for the color and materials, was so much resembled by the Colonial. Hence there is no hint of disconnection between the interiors and the exterior, and more than that the architect has found that he could sufficiently differentiate the purposes of the various rooms in the same style without resorting to Flemish Gothic for the dining room, Louis XVI for the drawing room and Mission for the library.

THE Town Hall, Huntington, L. I., Peabody, Wilson & Brown, architects (Plates XXIX-XXX), is not only very charming in itself, but it is designed along what should be the accepted type of design for public or semi-public buildings in our small American towns, especially in the East, where the Colonial traditions still survive with some strength. The architecture, though the genesis is evidently Colonial, is treated in a delightfully free modern manner which, although in perfect accord with the old fashioned Colonial is not an imitation, but a development. This kind of work seems to the writer more nearly real and genuine architecture than any copying of English, French or Italian motives can ever be. It is the natural style for an American of English descent to use, and while occasional brilliant architects can by a tour de force design on lines quite foreign to their instinctive preferences, and can even convince themselves that their acquired style is spontaneous, the results are seldom as happy as when the work is along Georgian lines. The lot was one which did not readily

lend itself to a public building, since it was a narrow angle between two streets, one of which was much lower than the other and sufficient space could only be obtained for the building by building it nearly at the rear of the lot, and setting the wings at a slight angle. In spite of this forced arrangement the plan has been very simply and pleasantly worked out so that direct communication is preserved to all parts of the building, and after arriving in the central hall one can find his way to every department of the city activities without the need to refer to signs or guides.

The exterior excellently expresses the purposes of the interior, the entourage is very well developed, and the building represents in general about the highest type of civic structure for the small town that can be imagined.

THE new Medical College, David R. Brown and Hugh Vallance, architects (Plates XXXI-XXXIII), is one of the most recent of the buildings for McGill University, Montreal, and it is a most attractive and interesting development of the modern method of using Collegiate Gothic. The main façade is a really remarkable piece of composition in five separate units with a constant change of level, yet united into a single symmetrical group. The building has what I cannot help but believe to be almost an essential to a successful treatment of the Gothic style to-day, a certain touch of the so-called Art Nouveau, which lends it a spirit and timeliness such as pure archaeology can never give. The only interior is of a light well in the Museum of Anatomy which the architects seem to have found much the same difficulty in handling that Messrs. Allen & Collens did in a similar construction in the Union Theological Seminary, and I cannot confess to feeling the same admiration for it that I do for the delightful exteriors. The introduction of colored terra cotta into the spandrels and into the hood courses of the arches themselves is interesting, but the suggestion of vaulting is not in sympathy with the frank post and lintel construction visible through the openings, and though one hardly knows what to suggest that would be better, one feels that there should be something different. The exteriors, however, need no such reserve, although they are at the present time somewhat hard and sharp, as is evident from the photographs, but the building has just been completed, and a further development of the grounds, specially the growth of vines, the staining of the stone by time, etc., will add to it softness and charm.

OUR "Canadian cousins" seem to possess as a whole an interest in and sympathy with English Gothic which is here confined to comparatively few architects. I suppose that outside of a half dozen men there is not one in the country who has done anything so interesting in the Gothic style as the McGill Medical College, Montreal, elsewhere illustrated, and the Royal Victoria Library, Toronto, Sproat & Rolph, architects (Plates XXXIV-XXXVI). They both of them possess the essential qualifications of modernity; we feel that they are not a reversion to mediaeval methods of construction or copies of mediaeval designs, but are rather an evolution from old Gothic forms and part of the real progress of architecture. The library is specially interesting in the texture of the wall surface and the details of the tracery of the great windows of the reading room; and in the picturesque and unsymmetrical treatment of the building as a whole. It is perhaps not very difficult to produce an unsymmetrical building which shall build up well from one point of view, but to design a free standing building which can be seen from all points, and which from all points shall mass up equally well and present continually new points of interest, upon close examination is a very different problem and Messrs. Sproat & Rolph, have, if one may judge from the photographs, been successful in the Royal Victoria Library in these two features, which militate so greatly for or against the success of picturesque architecture. In the single interior shown we find a broad simplicity of treatment; the walls are absolutely unornamented, the roof carried in frank and constructional manner, while the furniture is not only eminently suitable for library use, but also lends picturesqueness to the interior. There is one feature of the design which seems to me specially clever and that is the carrying of the dark color from the roof to the floor across the low toned walls by the use of curtains either side of the big window at the end of the room. It is an expedient as daring as it is simple and one whose validity is attested by its success.

THE ARCHITECT'S RELATION TO ILLUMINATION.

MELVIN SPENCER.

IN the treatment of our more pretentious buildings the effect under artificial light is becoming more and more important as the possibilities are beginning to be realized. Things which were considered impossible but a few years ago, now form important parts of the architectural scheme of many of our buildings.

It is encouraging to note this development and the satisfactory results attained, because it proves that wherever spectacular illumination is effected, the architect and engineers have worked hand in hand. It is necessary that both should meet on common ground, and while ideas may differ to a material extent there is a neutral ground, on which both can agree. It is true that in many cases the engineers do not understand or appreciate the importance of the architectural effect, and if their recommendations were carried out verbatim, the entire conception of an interior would be spoiled. On the other hand, the architect often attempts to produce special effects in artificial illumination, keeping uppermost in his mind the architectural detail and trusting the result to come about in a natural fashion.

Results in the past have proved that this is disastrous as it is seldom that an effective scheme of illumination along special lines can be worked out unless careful attention is paid to apparently insignificant details which should be considered when plans are first drawn.

Perhaps in no other branch of illumination is this more strikingly illustrated than in the use of cove lighting for interior work. In certain classes of interiors architects have always been more or less taken with this idea of lighting a room, but in nine cases out of ten, results proved disappointing from the lighting as well as the architectural standpoints.

There is an insufficient understanding of the factors entering into the successful carrying out of this type of illumination.

A difference of a few inches in the position of a cornice will make or mar an installation of this kind. Equally important is the contour of the cove within the cornice. Often a slight change in the shape or treatment of a ceiling will make a remarkable difference in the efficiency and ap-

pearance of cove lighting. Engineers are able to understand, perfectly, the relative importance of these various items, but if their recommendations are explicitly carried out, the architectural beauty of an interior is often ruined. There are, at the present time, many skilled engineers who have informed themselves in the essential principles of perspective and architectural detail, who are willing to sacrifice an ideally perfect installation in order to preserve the architectural effect, and where this is done, both the architectural beauty of a room may be preserved and the illumination be successful.

With the use of properly designed reflectors it is possible to light an interior of large dimensions, such as an auditorium of a church, or dining room of a hotel, so that not a lamp is visible, and the light is evenly distributed over the ceiling.

Too often in cove lighting one finds a blaze of light immediately above the cornice, producing a bad glare, and comparative darkness in the center of ceiling. This ruins the effect and purpose of concealed lighting for in reality the lamps are not concealed. Due to the intense glare above the cornice the source of light is easily discovered, while the soft, subdued illumination desired is utterly lacking.

When an architect first determines the treatment of an interior, rough plans, or even sketches should be forwarded to experts in illumination. Suggestions can be made as to slight changes, which will materially improve results, and we advise that the design of cove in cornice be left to such experts.

It is possible to design a special reflector that will direct the maximum flux of light where desired, so that an even illumination of the ceiling is possible, and if these sketches are carefully followed by the plasterer, so that the cove is made to fit special reflectors designed, successful results are the rule. It is difficult to realize the difference a slight variation of one panel of a reflector will make, but when one considers that where the light is thrown 20 or 30 feet, a variation of a few degrees will make a difference of several feet in area covered by it.

The difference between successful and unsuccessful installations of this character is due to this preliminary consultation.

The same may be said of lighting large interiors by means of reflectors concealed behind pilasters or piers, as in the sanctuary of a church. If reflectors are not very carefully designed, the tonal quality of light will be entirely lost. Instead of having an evenly lighted interior, a decidedly spotty one will result. By placing bare lamps, concealed behind a pilaster, an interior of this kind could be lighted, but lighted in such a way as to disfigure it, rather than adding to the attractiveness of a church by night.

A conspicuous example of this class of lighting is in the Cathedral of St. John the Divine, where the light is entirely concealed and remarkable for its even tone.

In church illumination it is often desirable to equip lights of this character with dimmers, so that any degree of intensity can be secured, as it is often advisable to have a dull religious light during certain ceremonies, and on other occasions festive in nature, a blaze of light is desired.

Church architecture, with its long vistas and vaulted ceilings is, as a rule, not adapted for fixtures, or rather, it is difficult to adapt fixtures for this style of architecture. In the better class of church interiors, at the present time, an effort is being made to do away with fixtures and secure a brilliantly lighted auditorium, with the lights concealed. Difference in construction often determines the advisability of adopting this plan, but two or three schemes have been worked out successfully in the larger churches throughout the country that might be of passing interest. One is the use of strips of carefully designed reflectors, concealed behind piers or tympanum of arches. In other cases, where a flat or arched ceiling is used, it is often possible to incorporate in the ceiling design, a decorative panel, using stained glass and above the stained glass, among the rafters or false ceiling, to place powerful, specially designed reflectors, which will force the light through the stained glass and provide illumination for the auditorium.

In carrying out the designs found in the Gothic and Romanesque windows of Continental cathedrals an infinite field for the elaboration of ceilings is opened up that can be made effective by day and by night.

The total wattage consumption is often not as great as the use of fixtures involves, and the result, if properly designed reflectors are used, uniformly successful. Often an ornamental corona or molding is made in which to set the stained glass panels, the design of which matters little to the efficiency of the system, but can be adapted to the needs of individual installations.

This system has been successfully applied in groined vaulted ceilings by means of quarter or hexagonal section and where adopted it has been used with telling effect.

The possibilities of this scheme in the treatment of interiors, such as auditoriums, ballrooms, restaurants, lodge rooms, etc., are endless, as it is possible to design a hanging ceiling, conceived as a unit of light, and decorative designs can be worked out with lighted portions as a part of the ceiling design. Arrangements can be made so that by day sufficient light is used to make these panels luminous, so that the design conceived for a night effect will be equally as effective by day without wasteful cost of current. Some really remarkable installations of this character have been made, rooms 100 feet square and 70 feet high being perfectly lighted in this way without a lamp being visible with a current consumption of but one-half watt per square foot.

In considering the architectural effect of interiors, under artificial illumination, the utmost attention should be paid to keeping the light source screened from the eye as much as possible. It is a well known fact that, due to the increased visual acuity, details which are quite indiscernible when brilliant lights are exposed to the eyes, appear with remarkable sharpness if the direct light is shielded from the retina. In many cheap vaudeville houses where a quick change of scene is desired without lowering curtain, brilliant lights are flashed in the eyes of the audience with the result that movements on the stage are invisible. This is simply an exaggerated example of the effect of exposed lights and the blurring of details.

This principle has special application to scientific lighting of working surfaces, such as desks, draughting tables, etc.

In the lighting of banks, the proper illumination of double desks, single desks, bookkeepers desks, etc., is of special importance, and this item has been the source of considerable worry to the architect, as much attention has been paid to this detail and results have been unsatisfactory. Generally, brackets with cone shades are used in various combinations, resulting in a bad glare line at the

399. PALACE OF COMPIEGNE. COURT OF HONOR.

point where the light was reflected directly into the retina of the eye.

There has been devised a special system for the illumination of banking desks, whereby the principle of cross reflection is used, and the light is forced on the working plane at an angle approaching 180 degrees, so that no light is reflected directly into the eyes and as a result no glare is produced. Cold drawn bronze in appropriate design is used as a framework for these desk lights so that no direct light is visible to the eyes and the angles of reflection can be so designed that an even light is diffused over the working plane.

The proper illumination of the cages is another problem which has worried the architect, both from its practical and artistic side. Where brackets are used the source of light is directly in the line of vision of the clerks, and they are generally disfigured by the use of blotters or tissue paper used to lessen the glare, and the dignified and harmonious appearance of the bank interior is ruined.

There has been developed a scheme whereby the source of light serves as a cornice for the screen. Cold drawn bronze, in appropriate moldings, is used for the cornice, and equipped with a ground glass diffusing door. Inside of this frame work correctly designed reflectors, with tungsten lamps are placed so that a continuous line of light is obtained. By daylight the appearance of the screen is symmetrical and dignified and by night no exposed light source is visible.

The same idea can be carried out on the partition screen, and where no counters are called for bank moldings can be used so that the entire cornice presents a uniform, harmonious appearance.

The lighting of hospitals is of such a nature that apparently very little significance can be attached to the architectural relation to the rest of the building, but as architects are compelled to look out for the best interests of the people who are to use this building, and as the lighting is of the utmost importance in hospital work, it is worthy of attention.

For the ward rooms where the eyes of the patients are generally in a weakened state, due to a more or less weak physical condition, care should be taken to protect the eyes from direct light, and for this reason white enamel indirect fixtures of simple design and provided with a glass cover to keep dust from accumulating, should be provided. These are in keeping with the spotless appearance of the interior of ward rooms and can be easily cleaned and kept sanitary.

In the operating room a white enameled fixture can be used, and care should be taken that a ventilated reflector is used, as high candle power is required in the nature of the work, and the heat generally developed by such lamps is a source of annoyance and sometimes of positive suffering to the surgeons.

Even the lighting of so commonplace a thing as a store window has its architectural significance and the finest and most carefully planned window can often be spoiled by improper lighting. It is now a generally accepted principle that the source of light should be totally screened and the light focused on the goods displayed, but very often the effect of the window is spoiled by an annoying back reflection showing lamps and reflectors in the back panel of window. This can be easily avoided by a properly designed reflector. In many cases an open back, or a partially closed back is adopted and where the source of light for the window display is visible from interior of store, it is advisable to use a drawn bronze molding which will harmonize with the transom bar as a shield for the reflector, thus giving a finished appearance to the window without the annoying glare generally found.

Very special problems in illumination come up for consideration in the architectural routine, such as the lighting of art galleries, squash courts etc. In private residence work it is often difficult to make these special reflectors required attractive and harmonious to the general scheme of the interior, whereas at the present time these are available in various molding effects, so that the design can be carried out in any period, and the reflector can be made to serve an ornamental purpose.

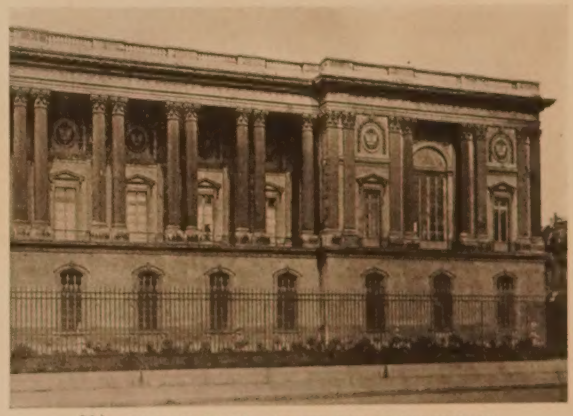
These problems which occur in ever-changing combinations make the treatment of illumination, in relation to architecture, a difficult problem. Each one needs special attention and care, but the solution can generally be found if expert opinion is sought and perseverance and patience used.

ARCHITECTURE OF THE RENAISSANCE IN FRANCE 1495-1830.*

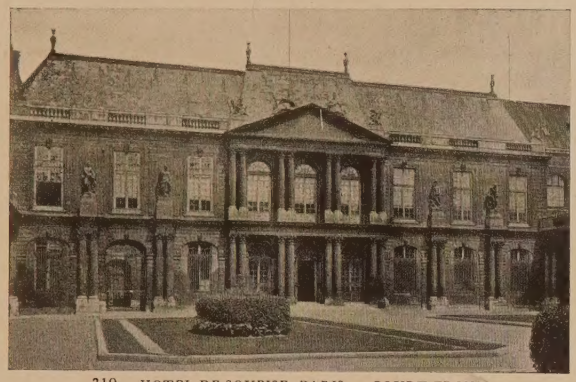
W. H. WARD.

IT is a curious and interesting fact that there have been no authoritative and complete histories of French Renaissance architecture published before the present time, and we find issued simultaneously a most excellent history of that style by Reginald Blomfield, a review of which was given last month, and the work treated here. It is also interesting to find that these two very complete histories,

*Chas. Scribners' Sons, New York. 2 vols., $12.00.



294, LOUVRE, PARIS. NORTH END OF COLONNADE.



319. HOTEL DE SOUBISE, PARIS. COURT FRONT.

both of which show evidence of careful and painstaking scholarship, supplement rather than duplicate each other's work. Mr. Blomfield's book deals very largely with the lives of the artists, their methods and conditions of work, and the formative elements which developed the styles treated. There is little critical analysis and practically no description of the various monuments of the period, and the less important buildings are merely mentioned, or altogether omitted from notice unless some particular point in their design has really contributed to the progress of the style or is explanatory of that progress.

Mr. Ward's book, on the other hand, is more of a text book. He treats very fully of the remaining (and of some of the destroyed) edifices of the period, permitting the buildings themselves largely to explain the progress of the art, and he has, in general, assigned them to the architects usually supposed to be their authors, in this respect especially varying from Mr. Blomfield who believes the generally received beliefs as to authorship to be oftentimes incorrect. Mr. Ward's book has much the character of a text book of the period treated, while Mr. Blomfield's seems rather a series of critical essays which show deeper research (or it may be closer study), but concerns itself rather with the tendencies and spirit of the times treated than with their concrete manifestations. The same divergence between the two works can be seen in the methods of illustrations; Mr. Blomfield's illustrations are largely from drawings, either the original architect's drawings or engravings of early date, while Mr. Ward's are in the main photographs, and most excellent ones. Nor are they the usual photographs which we find in art histories. Pains have been taken to illustrate the less well known portions of the buildings, and of a building even so familiar as the Louvre he presents one or more illustrations which are comparatively new. For the working library of an architect Mr. Ward's book seems the better; the subjects are more readily found, illustrations are more complete, and the subdivision of paragraphs with separate headings, is one which assists greatly to refresh the architect's mind on any particular subject without the necessity of spending considerable time in finding precisely where it is treated, while Mr. Blomfield's book repays careful and considered reading better than almost any other architectural work which it has been my good fortune to see.

THE PERRY MEMORIAL COMPETITION.

AS a result of a competition for the selection of an architect for the Perry Memorial, the design of J. H. Freedlander and A. D. Seymour, Jr., associate architects, has just been selected by the National Fine Arts Commission and accepted by the Inter-State Board of the Perry's Victory Centennial Commission.

Eighty-one of the leading architects of the country were invited to compete. The competition was judged by the National Commission of the Fine Arts consisting of Daniel H. Burnham, chairman, Frederick Law Olmsted, Thomas Hastings, Daniel C. French, Francis D. Millet, Cass Gilbert, Charles Moore and Col. Spencer Cosby, U. S. A., secretary.

The Building Committee appointed by the Inter-State Board consists of Mr. George H. Worthington, Colonel Henry Watterson and Lieutenant-General Nelson A. Miles, U. S. A. Mr. Frank Miles Day, past president of the American Institute of Architects, was the professional advisor to the Building Committee.

The Memorial is to be built on South Bass Island lying at the western end of Lake Erie. An appropriation of $700,000 for building same has been made by the United States Government and various States. It is intended that the Memorial shall be completed in the summer of 1913 at which time the celebration will take place.

The accepted design consists of a large plaza one thousand by two hundred feet on which is placed the shaft in the form of a Doric column 320 feet high. This shaft is to serve as a lighthouse and on the top of it is placed a light of the first order for the purpose of illuminating the adjacent waters.

The architects say:

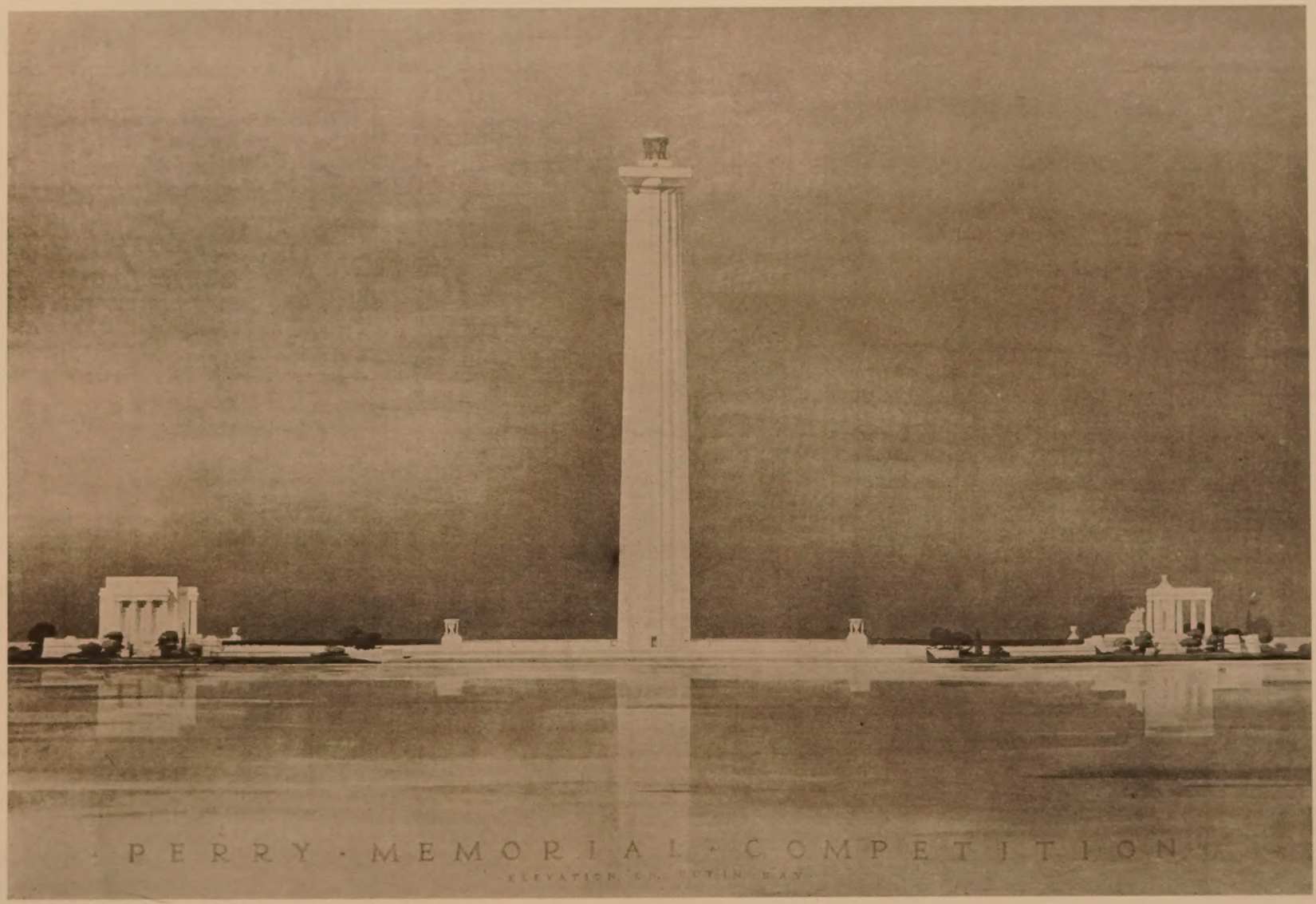
"In the accompanying design it has been our endeavor to so place the shaft that it shall be seen from all points of the compass. We have deemed this to be an essential requisite in the plan inasmuch as the column will not only serve as a light for navigation of the adjacent waters but will by its location become the dominant feature in the design.

"In view of the location of the neck of land in so great an expanse of water and the necessarily isolated character which these conditions imply, we are of the opinion that the Doric order, treated without ornament of any kind, is best adapted to convey the impression of grandeur and simplicity, which the nature of the Memorial suggests.

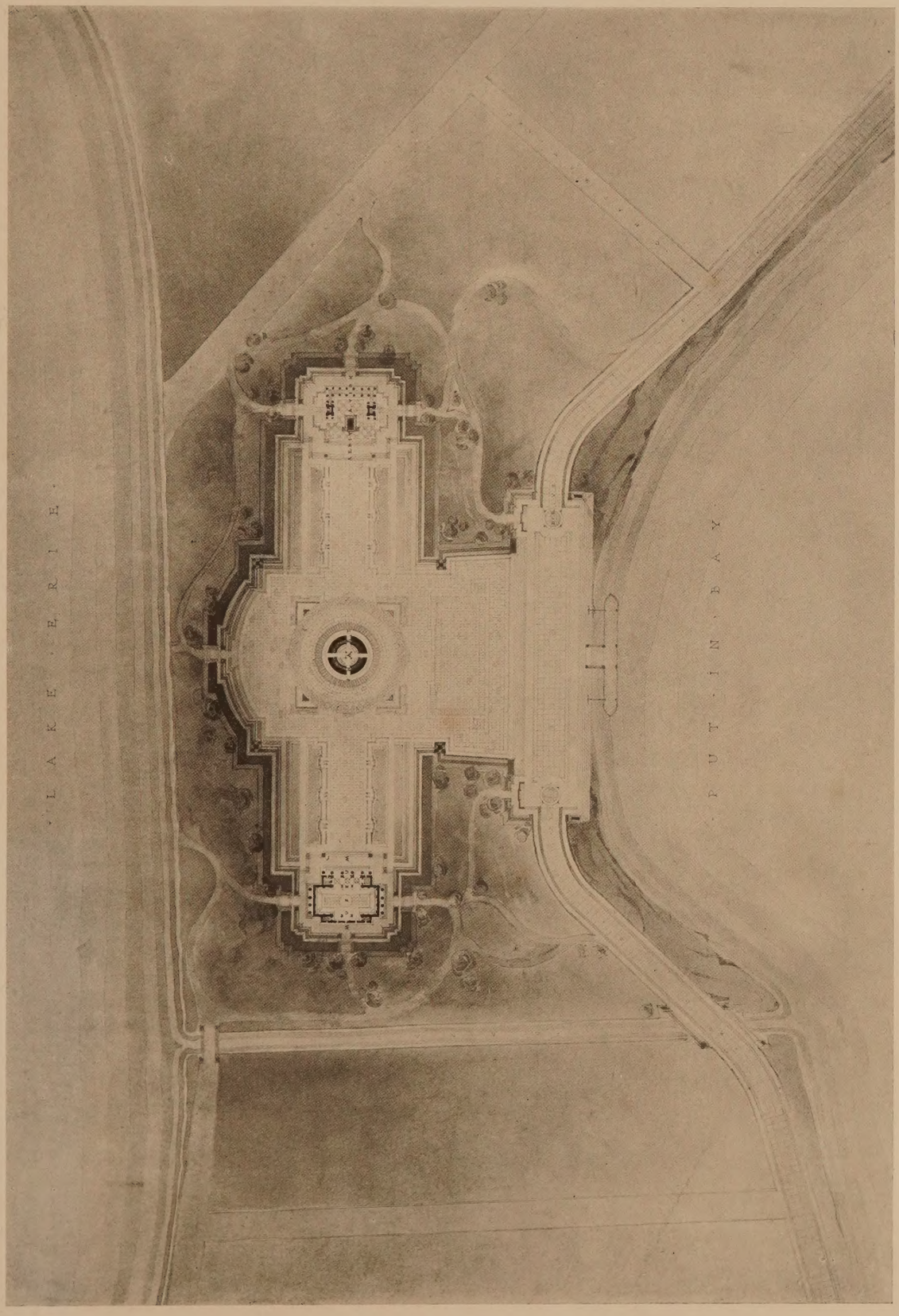
"The column as well as the museum and the colonnade are placed on a plaza, some few steps above the grade of the property. This plaza extends to the shores of the bay, and is reached from the water by means of a broad flight of steps. The shore drive, constituting the main approach, runs

(*Continued page 43*)

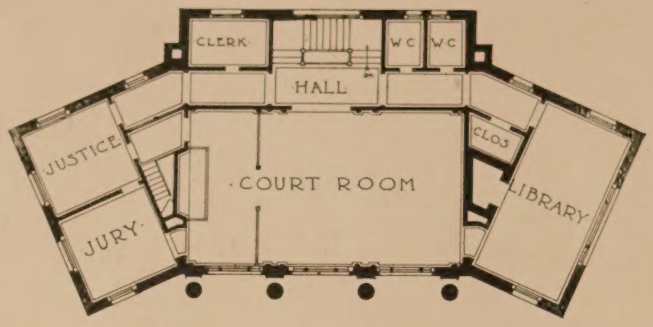
295. LOUVRE, PARIS. CENTER OF COLONNADE.



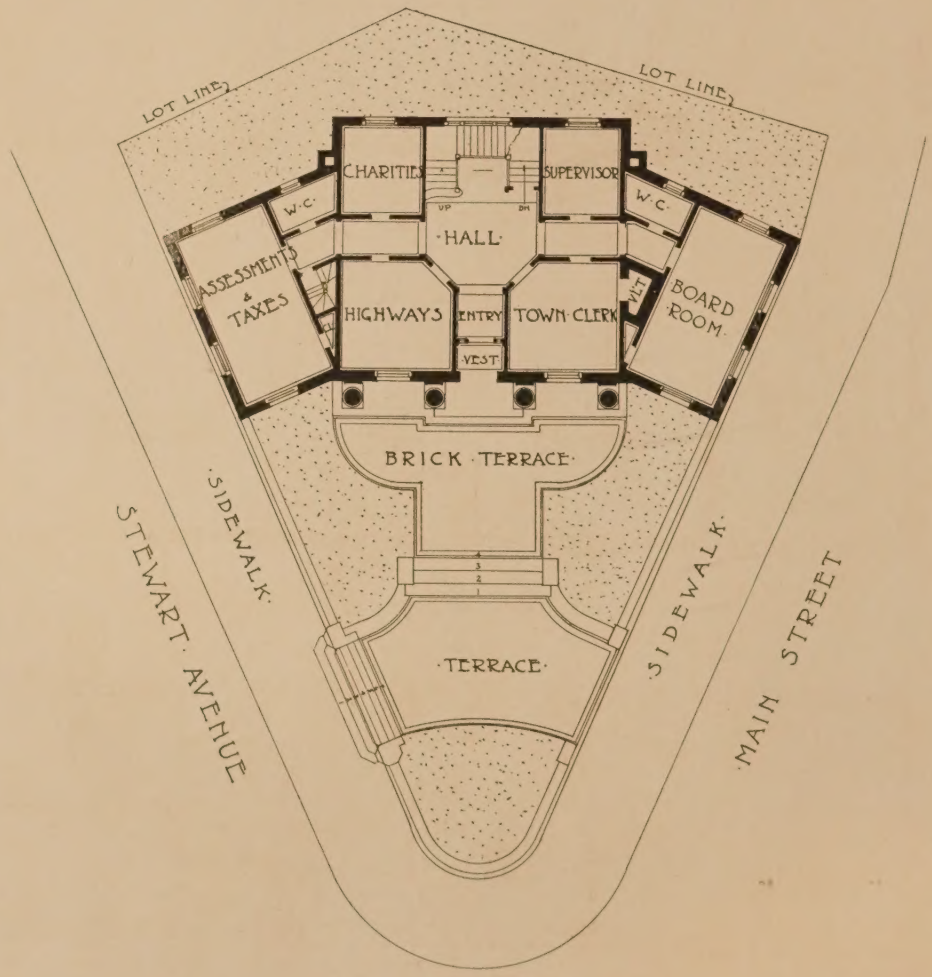
PLACED I. ELEVATION ON PUT-IN-BAY, LAKE ERIE, PERRY MEMORIAL COMPETITION. J. H. Freedlander and A. D. Seymour, Jr., Associated Architects.



PLACED 1. PLAN, PERRY MEMORIAL COMPETITION. J. H. Freedlander and A. D. Seymour, Jr., Associated Architects.



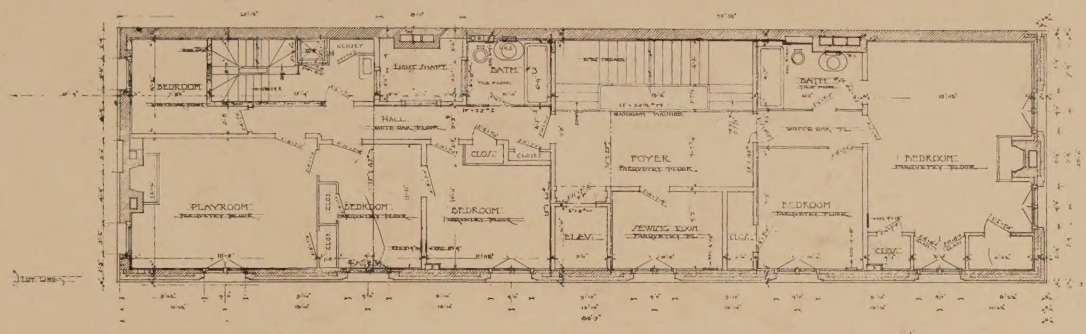
SECOND FLOOR PLAN
SCALE ¼"-1'-0"



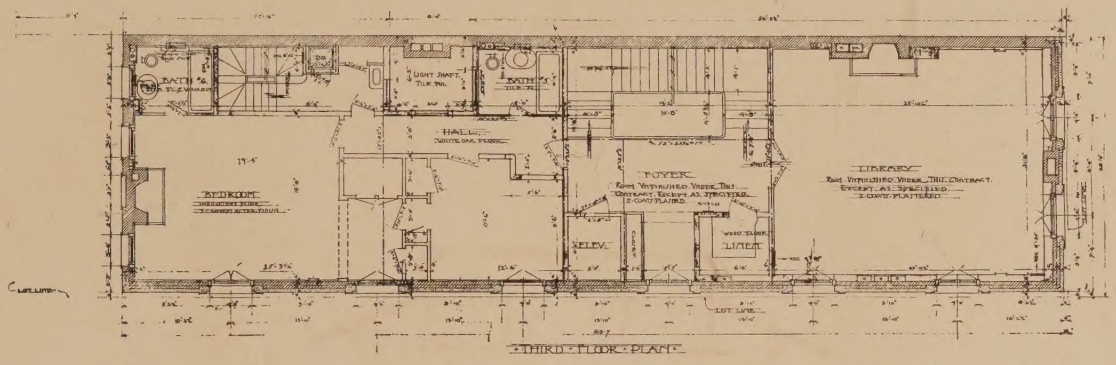
GROUND FLOOR PLAN
SCALE ⅛"=1'-0"

TOWN HALL AT HUNTINGTON L. I.

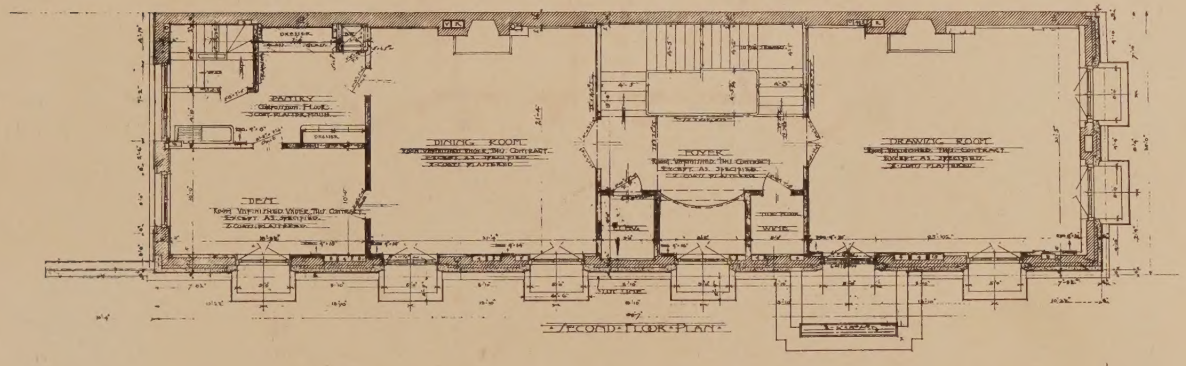
PEABODY, WILSON & BROWN, ARCHITECTS
389 FIFTH AVENUE,
NEW YORK CITY



FOURTH FLOOR PLAN



THIRD FLOOR PLAN



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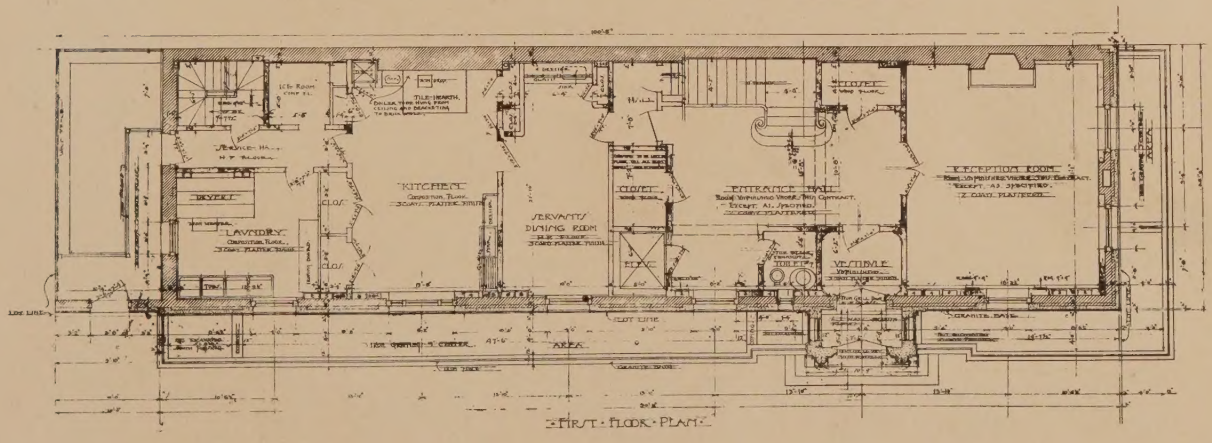


FIRST FLOOR PLAN

PLANS, RESIDENCE, ROBERT A. CHESEBROUGH, MADISON AVE. AND 71ST ST., NEW YORK. Albert Joseph Bodker, Architect.

Dining Room.

Living Room.

INTERIORS, RESIDENCE, ROBERT A. CHESEBROUGH, MADISON AVE. AND 71ST ST., NEW YORK. Albert Joseph Bodker, Architect.
F. B. Johnston and M. E. Hewitt, Photo.

(*Continued from page 37*)

through it so that it is accessible for visitors both by carriage and by small boats. A landing float is provided for the latter at the bottom of the steps.

"The plaza is to serve for exercises and ceremonies and to accommodate large assemblages.

"We have not deemed it advisable to obscure the view of the column in any direction either by placing a building or a colonnade in the rear of it. On the contrary, we have kept the square in which it stands open and have obtained a vista for the museum and colonnade by placing them some distance from it.

"The museum and the colonade are elevated on a terrace and at a slightly higher level than the main terrace so that the view may be enhanced and the buildings set off to greater architectrual advantage. The museum is placed on the left while on the right we have suggested a group symbolical of Perry, flanked by a colonnade to typify the first arbitration treaty between two great civilized nations—the United States and Great Britain.

"The program has suggested that an additional feature besides the museum and shaft might be incorporated later, and it has seemed to us most fitting that the arbitration treaty, an epoch-making event in the history of two great peoples, should find a fitting embodiment in this Memorial erected to commemorate the centennial anniversary of the war of 1812 and the victory of Commodore Perry at the battle of Lake Erie.

"It is a striking fact that two countries which have been at peace for a period of a hundred years should definitely seal their friendship by means of a general treaty, the spirit of which shall insure to the English speaking races this final triumph of civilization.

"We have placed the canal along the boundary line of the property and have not in any way attempted to give it an architectural treatment as we considered that its purpose is for the passage of very small boats only and therefore it should not be made of importance in the general plan."

GOOD ROADS FOR COUNTRY ESTATES.

GRAVEL is found deposited either in banks or in the beds of streams. Typical and notable examples of the former, from which New York derives its principal supply, are to be found on both shores of the Hudson River in the neighborhood of Peekskill. Here the material has been laid down by glacial action in the presence of a rich binder, mixed in such proportions as to produce a material of standard excellence; in fact, it is possessed of such superior qualities that it is frequently quoted in specifications against which other gravels are required to measure up.

Perhaps the greatest advantage peculiar to gravel, comes from the presence of the binder, which possesses the power of quickly reconsolidating the material under traffic, even after the first bond has been broken, thus reducing repairs and maintenance to a comparatively simple and inexpensive matter. On the other hand, with broken stone it is only with the greatest difficulty that the surface can be restored after the bond has been destroyed, and where it takes weeks for new stone to incorporate with the old in a macadam surface, it takes only as many days with good self-binding gravel.

An excellent indicator of the quality (of the binder) though merely an inspection test, is an examination of the material in the pit. If it is found to stand with a vertical face, to require a pick to dislodge it, and if large masses occur in which the smaller pieces are cemented together, as in a conglomerate, it may without hesitation be pronounced satisfactory. The stone itself should possess like characteristics to those required of broken stone; that is, it should be hard, tough and durable, and the fine material that is abraided should have the power of cementing the individual stones together. The hardness is to take the wear, the toughness to resist impact, and the cementitious quality of the abraided material to aid in replacing binder that may have been removed from any cause. With respect to the hardness and toughness, however, gravel does not need these qualities to the same degree as broken stone since it is generally employed under conditions where extremely hard material is undesirable, that is, under conditions that exist with average traffic.

Considering the first cost, the items of maintenance and of repairs, of the two materials, there can be no doubt that gravel is much more economical. All engineers are agreed that gravel makes an excellent covering for roads where the traffic is light, and as these are in the vast majority among improved highways, it would seem that gravel deserves more consideration than is generally given to it.

In the laying out of large country estates, engineers find that gravel makes the most satisfactory roads and paths. It combines a quality, efficiency and comparative economy, at the same time the material does not in any sense detract from the harmony of any general landscape scheme.

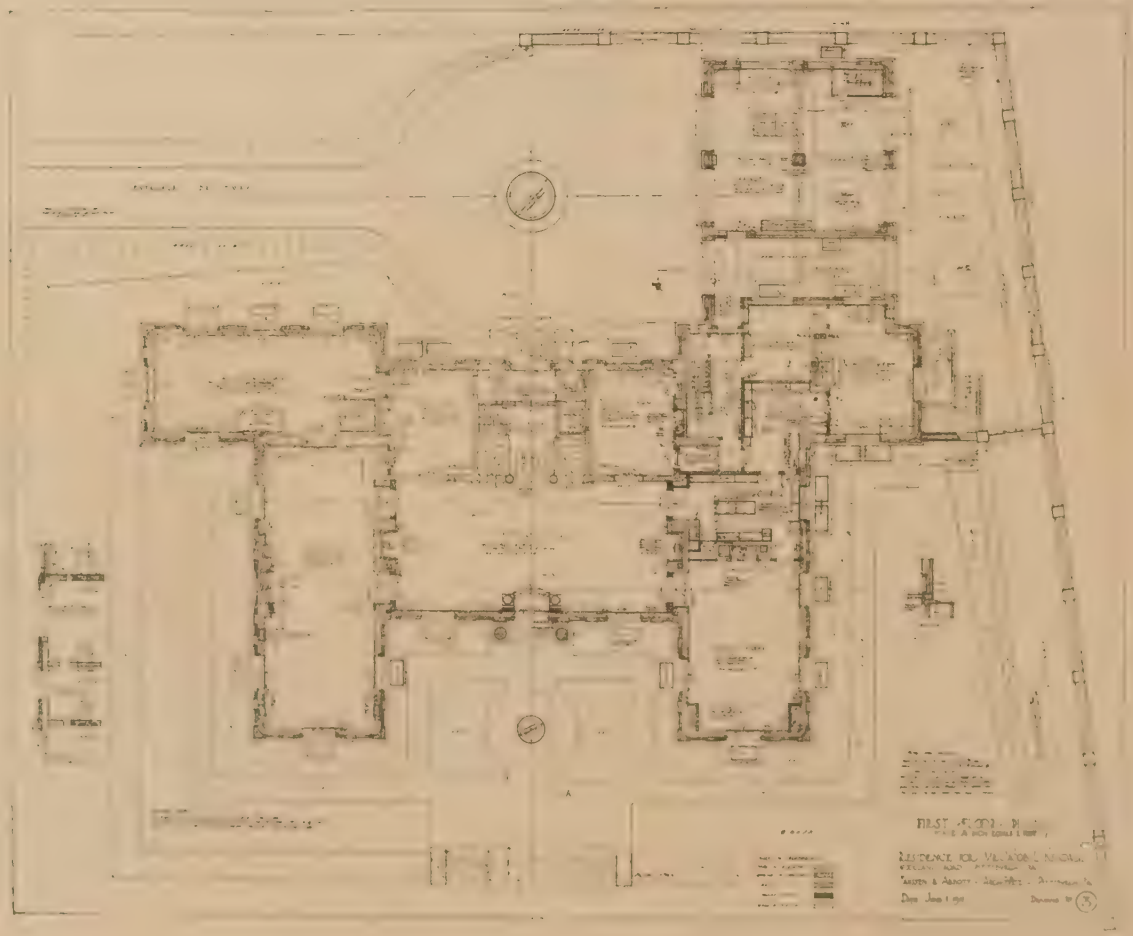
THE CONSTRUCTION OF LOMBARD AND GOTHIC VAULTS.*

ARTHUR KINGSLEY PORTER.

PROBABLY the chief use architects will find in this work is to have substantially the whole field of this type of vaulting covered at least by one example of each period in the same work. To the architect, however, who is interested in the history of his art as well as its results, the account of the reasons for the adoption of rib vaulting in preference to the old fashioned barrel vault or groin vault will be valuable. The hypothesis which it is sought to prove, is that the development of the rib vault in preference to the others was because it needed no expensive wood centering, and while such a hypothesis seems on its face very surprising, in view of the extensive forests generally supposed to be in existence, and low cost of labor at the time, Mr. Porter seems to have made his point. It seems that timber, at least in Italy, was hardly more common than it is to-day.

The history of the vaults themselves is well presented, more completely than one expects in a brochure of this character, and the author's point of view has been evidently developed through a pretty thorough knowledge of the subject, rather than by an attempt to bolster up preconceived notions with selected examples.

*Yale University Press, New Haven, Conn.



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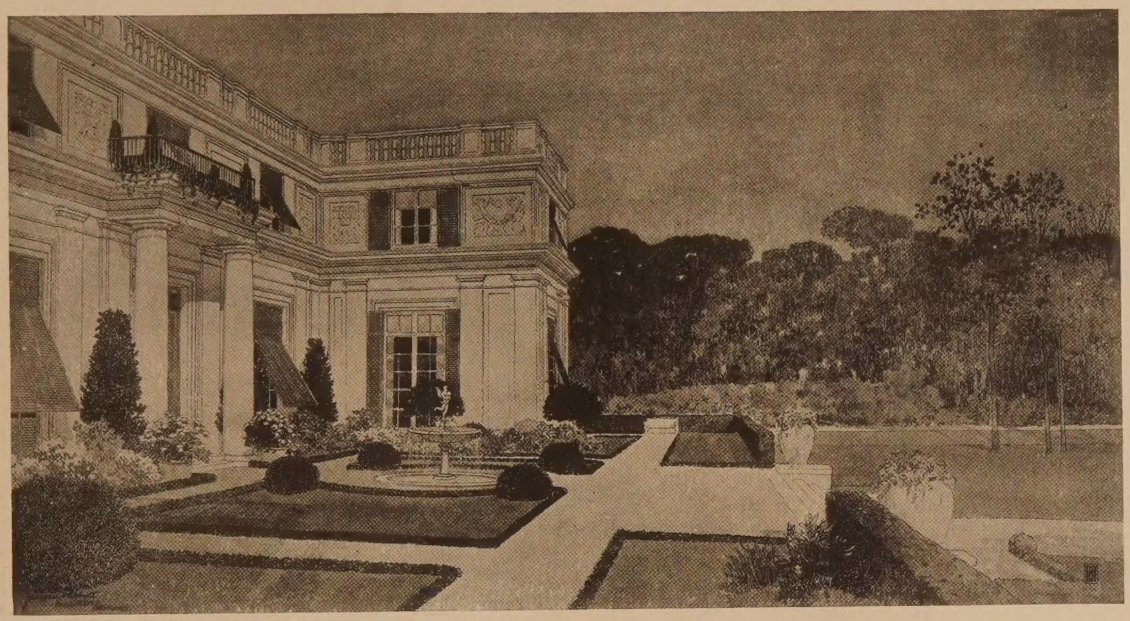

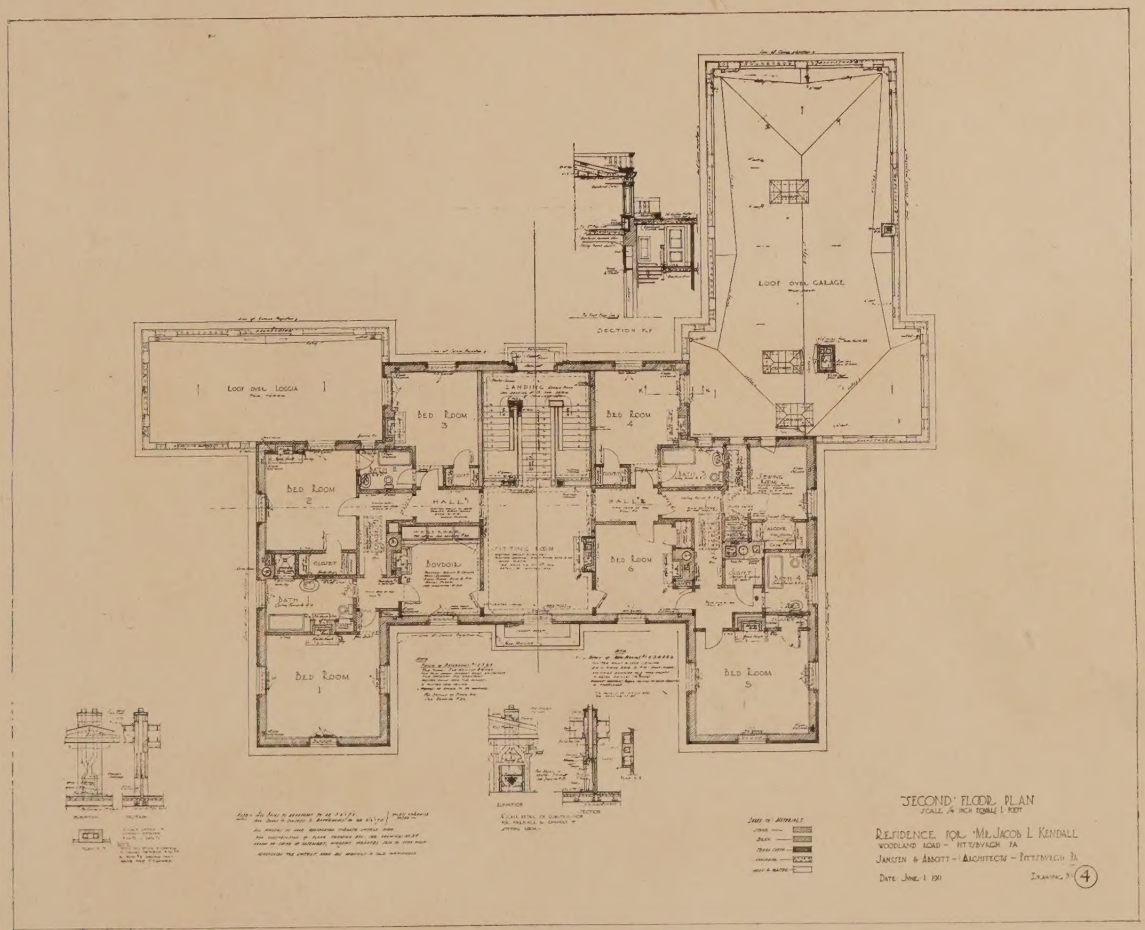

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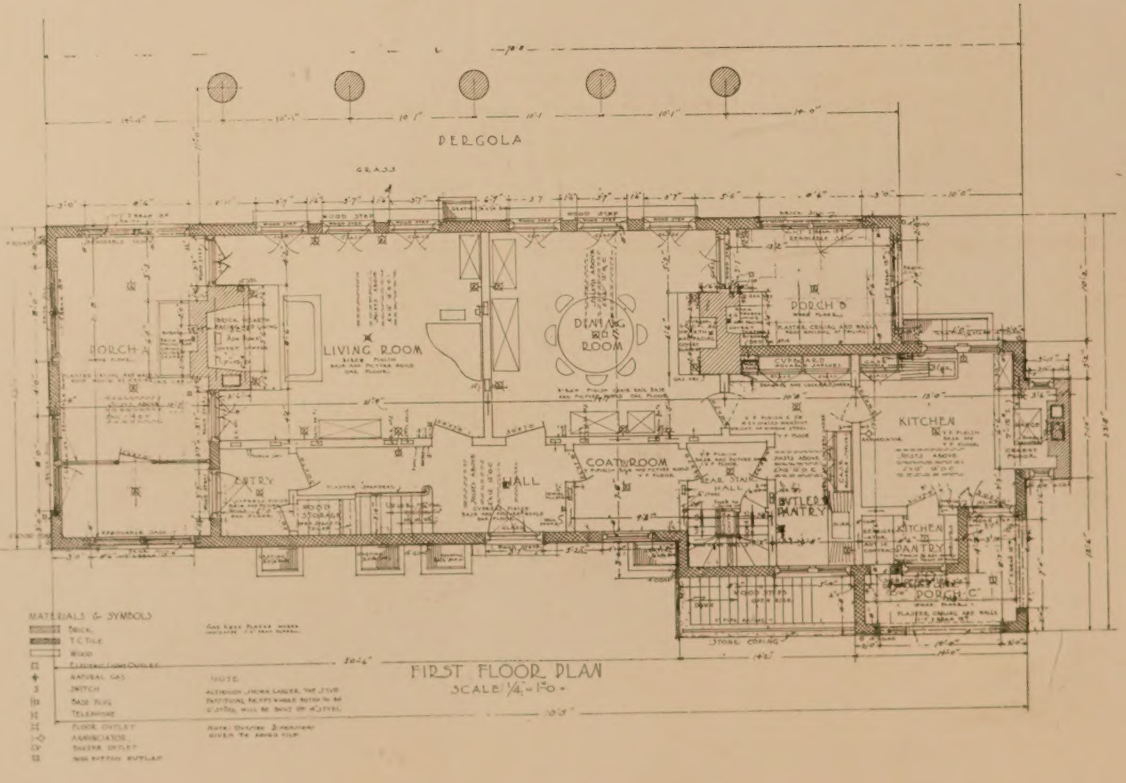

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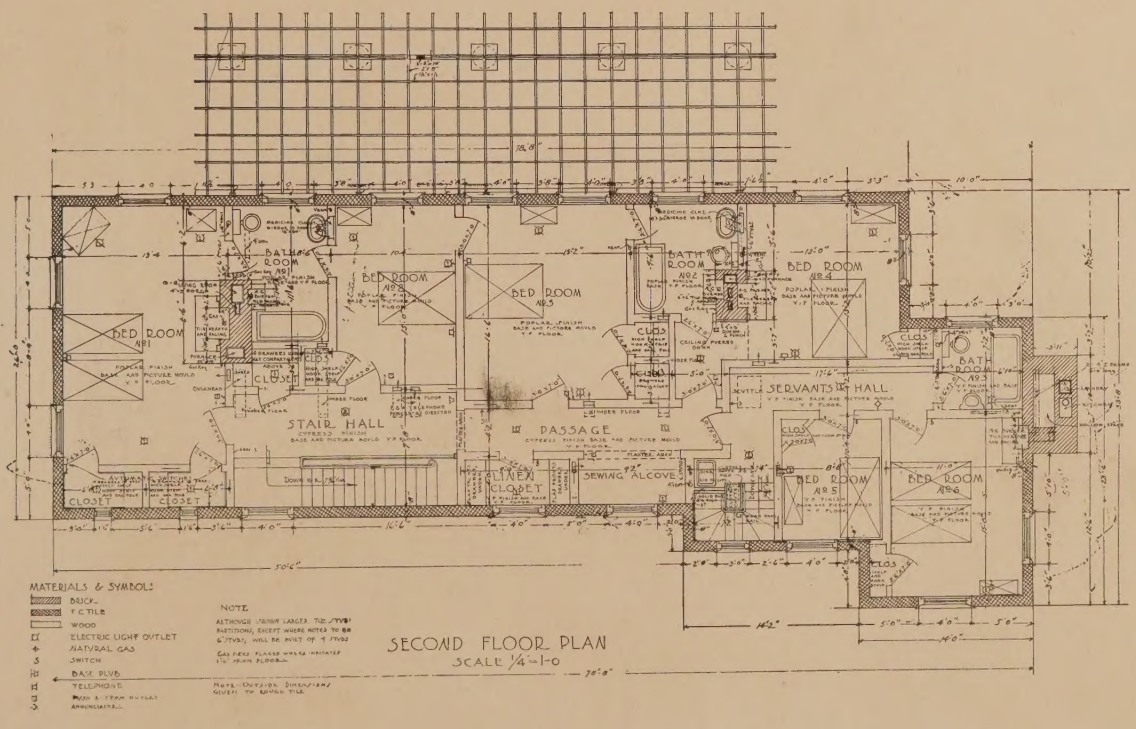

HOUSE AND PLAN, W. B. TRAINER, DUQUESNE, PA.

Janssen & Abbott, Architects.

House at Bogota, N. J.

House at Newark, N. J

House at New York University.

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